Tectonics of southern Osaka Plain based on dislocation modeling and subsurface data

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The Osaka basin is surrounded by E-W trending strike slip faults and N-S trending reverse faults. The N-S trending 42-km-long Uemachi faults traverse in the central part of the Osaka city. The Ministry of Education, Culture, Sports, Science and Technology started the project to survey the Uemachi faults from 2009 to 2012 for countermeasures against earthquake disaster.
The various geological, geophysical surveys, such as seismic reflection, micro tremor, gravity surveys and deep boreholes, revealed the complex basement configuration along the Uemachi faults. The survey results revealed not only the detail subsurface structure of the Uemachi fault, but also E-W trend structure. Sugiyama and Imanishi (2015) explained the E-W trending structure caused by deep-seated fluids.
In the south part of the plain, there were difference between the depth of the basement, estimated by gravity analysis and seismic reflection surveys (Osaka Prefecture, 2005; Inoue et al., 2014). This suggests the density of the sediment or the basement of the north and the south part of the plain differs. The difference is considered as the variation of density contrast due to some local distribution of the volcanic rocks. The magnetic anomaly indicates higher value at these points. The density structure was discussed from the gravity anomaly in consideration of the high magnetic anomaly area (Itoh et al., 2012).
Kusumoto et al. (2001) reported that surrounding faults enable to form the similar basement relief without the Uemachi faults model based on a dislocation model. Inoue et al. (2013) performed various parameter studies for dislocation model based on Kusumoto et al. (2001). The model was consisted 11 faults, the Rokko-Awaji, ATL, MTL, Ikoma, Eastern Nara, Osaka-wan, Kongo, the North and South Uemachi faults and, Sakuragawa and Suminoe flextures. The dislocation was calculated based on the Okada et al. (1985). The results show the similar basement displacement pattern to the actual basement configuration.
In this presentation, the dislocation simulation with surrounding faults and other source suggested by Sugiyama and Imanishi (2015) will be performed and the comparison with inversion results of gravity anomaly and dislocation model will be shown.
This research is partly funded by the Comprehensive Research on the Uemachi Fault Zone (from FY2010 to FY2012) by The Ministry of Education, Culture, Sports, Science and Technology (MEXT).

Keywords: Osaka Basin, Dislocation model, Potential Data

